

August 27, 1956

Dear Sol:

The enclosures are self-explanatory. I hope you won't be as tardy as I have been in passing this on further to Boris (as Jacques has requested). He will find it important for completing his paper on "activation". Frankly, I'm not convinced that the whole story is apparent, but it is no less interesting whether it furnishes an adequate explanation of Lac_1^- or of "crypticity" or not.

Sincerely,

Joshua Lederberg

Rickenberg, H.V., Cohen, G.N., Buttin, G. + Mued, J. β -galactoside-
permease of *Escherichia coli*.

Turn 47 made T*MG.

cpm to 5%.

Azide inhibits accumulation. Metabolizable substrate arguments. About 70x conc.
by induced cells.

Uninduced cells are not affected by azide; show passive accumulation.

A TMG derivative is eventually detected but not reliably detected. Reaches ~5%.

* Accumul. is induced either by TMG or Azide or NPP
 $2 \times 10^{-2} M$! $10^{-3} M$. ~ ϕ TGal not ϕ TG

Facts equil. $B + TMG \rightleftharpoons B-TMG$

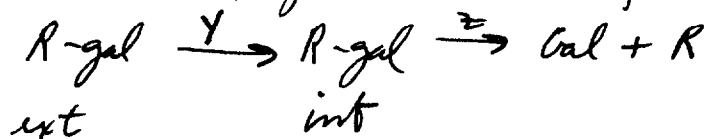
$$K = 4.3 \times 10^{-4} M$$

Clambs on P₀ also accumulated. No data! or as lecture. No evidence that rate of entry is greater! No inds. by azide.

Chloramphenicol inhibits formation of γ , as do a.a. analogues. Also, an
M⁻ mutant requires methionine. Inds by glucose too. Perfect parallels
of γ -system & inducibility.

Is γ interior? No. 1. accumulation = 5% of weight of lactose! Different permeants
have different totals & γ receptors. \therefore has a catalytic function.

Functional relation to β -galactosidase activity.



W2242, 2242 still have γ & allow estimate of NPP accumulation.

W2241. γ less. Induced cells, induced by high levels of TMG still have
low activity on NPP or on lactose.

Cells held at 34° lose γ , keep β

TMG has high affinity for γ , low for β .

Cat + forms $\gamma + \beta$ constitutively. \therefore these functions

$\gamma, \beta, \& i$ (which so far is common to both $\gamma + \beta$
= constitutive) ($+$ = inducible, i^- = const.)

Why does γ to
azide mimic
this result
Any evidence
that $\gamma + \beta$ allow
faster permeation?

$lac_1 : g$

$lac_2, lac_3 : z$ lac_4 - linked to lac_2 .

i - also close to lac_1 .

lac_4 is $y^- z^+$ ^{very low}.

lac_1, lac_4 Cst consisting a "complex locus".

See Dondorff (15) - *Pseudomonas* or lac_3 . lac_3 has a
Metal permease